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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,071	10/25/2000	James Norman Cawse	RD-28,030	3513

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EXAMINER
SMITH, CAROLYN L

ART UNIT	PAPER NUMBER
1631	

DATE MAILED: 01/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/696,071	CAWSE ET AL.
	Examiner	Art Unit
	Carolyn L Smith	1631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *16-17, 21-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 18-20* is/are rejected.

7)☒ Claim(s) *15 and 20* is/are objected to.

8)☒ Claim(s) *1-25* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2,3,4*.
4) ☐ Interview Summary (PTO-413) Paper No(s) _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Applicants' elections with traverse of Group I (claims 1-22) and species A (a (secondary) experimental space which is a ternary space) in Paper No. 7, filed 11/18/02, are acknowledged. Claims 23-25 are withdrawn from consideration as being drawn to non-elected Groups. Claims 16-17 and 21-22 are withdrawn from consideration as being drawn to non-elected species.

Applicants' traversal is on the grounds that Groups I and II are sufficiently related not to create undue search burden and that quaternary and pentanary space claims should be examined as well due to the "common utility" and shared "substantial structural feature" to that of the ternary experimental space.

The applicants' request to combine Groups I and II into one invention and to examine quaternary and pentanary space claims was found unpersuasive because of the following reasons:

Regarding the recombining of Groups I and II, allegations presented by Applicants in Paper No. 7, filed 11/18/02, without factual support are found unpersuasive because Applicants did not negate the distinctness and nonoverlapping subject matter recited in the previous Office Action, mailed 10/24/02.

Regarding the request to examine quaternary and pentanary space claims additionally due to the "common utility" and shared "substantial structural feature" to that of the ternary experimental space, Applicants have not indicated a common structure in these experimental spaces which are clearly three separate structures. Applicants have failed to negate the distinctness of the species presented on page 3 of the previous Office Action, mailed 10/24/02. Alternatively, as stated on lines 3-7 of page 4 of the same Office Action, if the Applicants

traverse on the ground that the species are not patentably distinct. Applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case.

The second to last paragraph on page 2 of the Applicants' election (Paper No. 7), filed on 11/18/02, is acknowledged although it does not contain an argument.

The requirements are still deemed proper and are therefore made FINAL.

The information disclosure statement, filed 5/1/2002, contains a reference (Rodemerck et al.) which was not considered in the examination due to its contents being in a foreign language.

The corrected or substitute drawings were received on 11/18/02. These drawings are approved.

Claims herein under examination are 1-15 and 18-20.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Non-initialed and/or non-dated alterations have been made to the oath or declaration. Please note the double signature which seems to be an un-initialed correction. See 37 CFR 1.52(c).

Specification

The disclosure is objected to because of the following informality: the overlap of letters on lines 8 and 9 of page 6.

Appropriate correction is required.

Claim Objections

Claims 15 and 20 are objected to because of the following informality: failure to end with a period. Appropriate correction is required.

Claims Rejected Under 35 U.S.C. § 112, Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 and 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Claims 1-4, 6-8, 10-14, and 18 contain embodiments which are beyond the elected invention, particularly "second experimental space." Correction is suggested by stating only the embodiments (in this case "ternary second experimental space") which are part of the invention. Claims 5, 9, and 19 are also rejected due to their dependency from claims 1, 2, and 18.

Claims 1-2, 6-8, and 18-19 recite the term "factors" which is vague and indefinite. It is unclear what type of factors are to be considered. One possible interpretation is that the

experimental space is a simulation which would include simulation factors. Another possible interpretation is that the experimental space is a procedural experiment which would involve physical factors. Clarification of the metes and bounds of this term via clearer claim wording is required. Claims 3-5, 9-15, and 20 are also rejected due to their dependency from claims 1, 2, and 18.

Claims 2 and 18 recite the phrase "select a best case set" which is vague and indefinite. It is unclear what criteria are used to determine that a case set is the best. Clarification of the metes and bounds of the claim via clearer claim wording is required. Claims 3-5 and 19-20 are also rejected due to their dependency from claims 2 and 18, respectively. Claim 8 is also rejected due to a similar issue of the "best set of factors" being selected.

Claim 3 recites the phrase "array of reactants" which is vague and indefinite. It is unclear if this phrase is referring to a microarray containing reactants or to a group of a large number of elements, in this case, reactants. Clarification of this phrase is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, 9-10, and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Reddington et al (1998).

Reddington et al. disclose a combinatorial screening method to select the best catalysts (page 1735, col. 2, lines 4-14 and page 1736, col. 1, lines 17-21), including ternary array combinations (page 1735, col. 3, lines 18-22 and 45-46) and parallel screening (page 1735, col. 3, lines 27-29). Reddington et al. disclose the need for well designed arrays which include elements or vertices (called factors in the instant invention) including binaries and ternary compositions (page 1736, col. 2, lines 6-19) which is equivalent to the "first experimental space" in the instant invention. Reddington et al. disclose eliminating redundant binary and ternary spots (page 1736, col. 2, lines 22-26) which is equivalent to the "second experimental space" in the instant invention. Reddington et al. disclose the array containing hundreds of different compositions (page 1736, col. 2, lines 26-30), as stated in claim 6. Reddington et al. disclose an array with non-redundant spots or "unique spots" (Figure 2 caption, line 3) (called "five-pick-four" pattern in the text and "second experimental space" in the instant invention). Reddington et al. disclose generating large combinatorial arrays (page 1736, col. 2, lines 2-4) which can then be dried, washed, contacted electrically, and then screened for activity (page 1736, col. 3, lines 14-18). Reddington et al. disclose some of the complexes as containing ruthenium and platinum (page 1736, col. 3, lines 8-10), as stated in claims 9 and 10. Reddington et al. disclose the presence of $OsCl_3$ (page 1736, col. 3, line 9), which is a halide composition as stated in claim 12. Reddington et al. disclose the use of a Ni2+ complex of 3-pyridin-2-yl-<4,5,6>triazolo-<1,5-a>pyridine (page 1736, col. 1, lines 6-7) which is an inorganic co-catalyst, as stated in claim 13. Reddington et al. disclose the use of small amounts of compounds (micro scale) to find some products with a substantial increase in activity (page 1736, col. 1, lines 13-15).

Thus, Reddington et al. anticipate the limitations in claims 1-4, 6, 9-10, and 12-13.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. (e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 6, and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reddington et al., in view of Chaudhari et al. (P/N 5,917,077).

Reddington et al. disclose a method of conducting experiments on second experimental spaces including a catalyst system (see 102(b) rejection above). However, Reddington et al. do not disclose the use of palladium or a combination of inorganic co-catalysts.

Chaudhari et al. disclose the method of preparing diaryl carbonates in the presence of a catalyst composition comprising a Group VIIIB metal such as palladium (abstract) in addition to inorganic co-catalysts (col. 1, lines 32-44). Chaudhari et al. state that various methods of

preparing diaryl carbonates are possible (col. 1, lines 18-31). A skilled artisan would have been motivated to enhance the experiments on second experimental spaces by using other compounds besides those mentioned by Reddington et al., such as those compounds mentioned by Chaudhari et al. in order to find alternatives to polycarbonate preparation which are environmentally advantageous over methods employing toxic gas, as stated by Chaudhari et al. (col. 1, lines 13-17). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use palladium and a collection of inorganic co-catalysts (as stated by Chaudhari et al.) in the combinatorial high throughput screening arrays (as stated by Reddington et al.), because this information would enhance understanding of potential molecular candidates to be used in the environmentally-friendly preparation of diaryl carbonates at the time of the invention, as stated by Chaudhari et al. (col. 1, lines 13-17). Thus, Reddington et al., in view of Chaudhari et al., motivate the limitations in claims 1-4, 6, and 9-14.

Claims 1-4, 6-10, 12-13, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reddington et al., in view of Agrafiotis et al. (P/N 5,901,069).

Reddington et al. disclose a method of conducting experiments on second experimental spaces including a catalyst system (see 102(b) rejection above). However, Reddington et al. do not disclose the use of an iterative process in order to select the best set of factors. Reddington et al. also do not disclose a processor, reactor, evaluator, display terminal, database, computer-generating test cases system, computer-combining test cases system, or an output of tables to a merged table of test cases.

Agrafiotis et al. disclose a combinatorial chemical library with three building blocks (factors) (col. 5, lines 6-18) in which an iterative process is performed whereby compounds are

tested, analyzed, and selected compounds are directed to the next iteration (col. 3, lines 42-55) as stated in claim 7. This reiteration process results in an optimization approach (col. 5, lines 25-28) as stated in claim 8. Agrafiotis et al. disclose a Chemical Synthesis Robot which synthesizes a chemical library by selectively mixing a set of chemical building blocks (col. 5, lines 28-36). Agrafiotis et al. disclose the generated library is then analyzed by an analysis robot to obtain data [including structure-activity/structure-property relationship data] pertaining to the compounds (col. 5, lines 62-67 and col. 6, lines 1-7) which is stored in a database (col. 6, lines 21-27). Agrafiotis et al. disclose the Synthesis Protocol Generator (processor and control logic, col. 7, lines 60-62) uses various types of data pertaining to chemical compounds in order to derive and/or refine models that conform to the observed data (col. 6, lines 28-36). Agrafiotis et al. disclose the generation of new instructions for the synthesis of chemical compounds from combinations of identified reagents (col. 6, lines 49-54). Agrafiotis et al. disclose an communication medium and input device (such as a touch screen) which receives input from human operators and forwards the information to the System Protocol Generator (col. 8, lines 8-22). Agrafiotis et al. disclose the use of an output device which is connected to the databases (col. 8, lines 8-13 and 23-29). This system disclosed by Agrofiotis et al. is performed on an microscale proportions (col. 8, line 43).

Reddington et al. discuss the need to intelligently design arrays because the number of compositions sharply increase with the addition of each new element (page 1736, col. 2, lines 6-9). A skilled artisan in the art would have been motivated to enhance the combinatorial screening method using non-redundant experimental design, as stated by Reddington et al., by automating the process in order to create an efficient and effective way of generating new

chemical leads for specific utilities, as stated by Agrafiotis et al. (col. 3, lines 27-29). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to create a computer automated system involving iterative steps to optimize the chemical selection process (as stated by Agrafiotis et al.) after redundant chemical combinations were eliminated (as stated by Reddington et al.), because this would have created a quicker and more efficient selection of chemical combinations within the wide range of possible combinations available in the combinatorial screening process as desired in the intelligent experiment designing of arrays as proposed by Reddington et al. (page 1736, col. 2, lines 6-9).

Thus, Reddington et al., in view of Agrafiotis et al., motivate the limitations in claims 1-4, 6-10, 12-13, and 18-19.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR §1.6(d)). The CM1 Fax Center number is either (703) 308-4242 or (703) 305-3014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carolyn Smith, whose telephone number is (703) 308-6043. The examiner can normally be reached Monday through Friday from 8 A.M. to 4:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached on (703) 308-4028.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instruments Examiner Tina Plunkett whose telephone number is (703) 305-3524 or to the Technical Center receptionist whose telephone number is (703) 308-0196.

January 14, 2003